



[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR part 25

[Docket No. FAA-2013-0911; Notice No. 25-13-22-SC]

Special Conditions: Airbus, Model A350-900 series airplane; lateral trim function through differential flap setting .

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for the Airbus Model A350-900 series airplanes. These airplanes will have a novel or unusual design feature associated with a lateral trim function that deploys flaps asymmetrically for airplane lateral trim control. This function replaces the traditional method of providing airplane lateral trim over a small range through flap and aileron mechanical rigging. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: Send your comments on or before **[insert a date 45 days after date of publication in the Federal Register]**.

ADDRESSES: Send comments identified by docket number FAA-2013-0911 using any of the following methods:

- Federal eRegulations Portal: Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.
- Mail: Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, D.C., 20590-0001.
- Hand Delivery or Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, D.C., between 9 a.m. and 5 p.m., Monday through Friday, except federal holidays.
- Fax: Fax comments to Docket Operations at 202-493-2251.

Privacy: The FAA will post all comments it receives, without change, to <http://www.regulations.gov/>, including any personal information the commenter provides. Using the search function of the docket web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the Federal Register published on April 11, 2000 (65 FR 19477-19478), as well as at <http://DocketsInfo.dot.gov/>.

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, D.C., between 9 a.m. and 5 p.m., Monday through Friday, except federal holidays.

FOR FURTHER INFORMATION CONTACT: Robert C. Jones, FAA, Propulsion/

Mechanical Systems, ANM-112, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington, 98057-3356; telephone (425) 227-1234; facsimile (425) 227-1320.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

We will consider all comments we receive on or before the closing date for comments. We may change these proposed special conditions based on the comments we receive.

Background

On August 25, 2008, Airbus applied for a type certificate for their new Model A350-900 series airplane. Later, Airbus requested and the FAA approved an extension to the application for FAA type certification to June 28, 2009. The Model A350-900 series has a conventional layout with twin wing-mounted Rolls-Royce Trent XWB engines. It features a twin aisle 9-abreast economy class layout, and accommodates side-by-side placement of LD-3 containers in the cargo compartment. The basic Model A350-900 series configuration will accommodate 315 passengers in a standard two-class arrangement. The design cruise speed is Mach 0.85 with a Maximum Take-Off Weight of 602,000 lbs. Airbus proposes the Model A350-900 series to be certified for extended operations (ETOPS) beyond 180 minutes at entry into service for up to a 420-minute maximum diversion time.

On conventional airplanes, small lateral airplane asymmetries have typically been addressed through flap and aileron rigging (e.g., using shims). On Model A350-900 series

airplanes, an order for asymmetric flap deployment will be computed by the primary flight control system as a function of the aileron position. The current airworthiness standards do not contain adequate safety standards for asymmetric use of the flaps as proposed for Airbus Model A350-900 series airplanes. Special conditions are needed to account for the aspects of a function used to command an intended flap asymmetry. The lateral trim function is intended to be performed once during climb and once during cruise to compensate for small airplane lateral asymmetries.

The lateral trim function is not a trim control system in the conventional sense as it has no pilot interface and is not governed by § 25.677. In fact some fly-by-wire airplanes have no pilot operated lateral trim at all. The lateral trim function is simply an additional fly-by-wire flight control function that nulls small roll asymmetries in certain flight phases with small asymmetric flap deployments. Although the function operates under normal conditions within the small range of the traditional rigging, there may be failure cases leading to a significant out of range asymmetric flap condition. An asymmetry threshold will protect the system against excessive flap asymmetry.

Type Certification Basis

Under Title 14, Code of Federal Regulations (14 CFR) 21.17, Airbus must show that the Model A350-900 series meets the applicable provisions of 14 CFR part 25, as amended by Amendments 25-1 through 25-129.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Model A350-900 series because of a novel or unusual design feature, special conditions are prescribed under § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should

the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, the proposed special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and proposed special conditions, the Model A350-900 series must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR part 36 and the FAA must issue a finding of regulatory adequacy under § 611 of Public Law 92-574, the "Noise Control Act of 1972."

The FAA issues special conditions, as defined in 14 CFR 11.19, under § 11.38, and they become part of the type-certification basis under § 21.17(a)(2).

Novel or Unusual Design Features

The Airbus Model A350-900 series will incorporate the following novel or unusual design features: the asymmetric use of flaps to address lateral trim which is not adequately addressed by § 25.701.

Discussion

Title 14 Code of Federal Regulations (14 CFR) part 25 section 25.701(a) requires that unless the airplane has safe flight characteristics with the flaps or slats retracted on one side and extended on the other, flap and slat surfaces must be synchronized by either a mechanical interconnection or any equivalent means that has the same integrity. Synchronization is interpreted to mean that flap movement is symmetrical throughout the full range of flap motion. Because the lateral trim function intentionally creates asymmetric flap motions, the flap system installation of the Model A350-900 series does not meet the requirement of § 25.701(a) and (d).

Applicability

As discussed above, these proposed special conditions apply to Airbus Model A350-900 series airplanes. Should Airbus apply later for a change to the type certificate to include another model incorporating the same novel or unusual design feature, the proposed special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on the Airbus Model A350-900 series airplanes. It is not a rule of general applicability.

List of Subjects in 14 CFR part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Proposed Special Conditions

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for Airbus Model A350-900 series airplanes.

1. Lateral Trim Function through Differential Flap Setting.

Current airworthiness standards, specifically § 25.701, do not contain adequate safety standards for the proposed design. In lieu of the requirements of § 25.701(a) and (d) for the lateral trim function, the following special condition is proposed:

- a. Airbus must demonstrate that an unsafe condition is not created by using the flaps asymmetrically,
- b. The degree of acceptable asymmetry must be defined and justified for all flight phases with respect to:

- § 25.701(b) and (c), with the worst case asymmetric flap configurations, and
- providing equivalent protection against excess asymmetry in the same manner as § 25.701 provides to systems that are synchronized or use another equivalent means to prevent asymmetry.

c. This lateral trim function is a flight control system and therefore must show compliance to both general system requirements as well as general flight control requirements. Therefore, the function must be demonstrated not to embody, where practicable, significant latent failures.

Issued in Renton, Washington, on October 22, 2013

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Aircraft Certification Service

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